

## University of Groningen

### **Abstracts of the 26th World Congress on Ultrasound in Obstetrics and Gynecology, Rome, Italy, 24-28 September 2016**

Fontanella, F; Duin, L; Gracchi, V; Cohen-Overbeek, T E; Pajkrt, E; Bekker, Mireille N.; Adama Van Scheltema, P; Willekes, C; Bax, C; Bilardo, C M

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## 26th World Congress on Ultrasound in Obstetrics and Gynecology, 25–28 September 2016, Rome, Italy: presentations and awards

### Presentation of the Ian Donald Gold Medal to Joachim Hackelöer

The Ian Donald Gold Medal is the Society's most prestigious award because it is given to someone who has transformed the way in which we practice our specialty, either by introducing a new technique or by original research which has changed the way in which we think about our subject. This year, ISUOG has awarded the Gold Medal to Joachim Hackelöer: a worthy inheritor of this very famous medal, for his research founded the basis for ultrasound in reproductive medicine.

He was born in Marburg, Germany, in 1945. He studied medicine at the University of Marburg and received his doctorate in 1971. He studied obstetrics and gynecology in the University Hospital, Marberg between '71 and '78 and received advanced ultrasound training in prenatal diagnosis, with Manfred Hansmann in Bonn, and in gynecology, with Alfred Kratochwil in Vienna. At that time he would no doubt have seen an ovarian follicle demonstrated with a transvaginal probe; it was this that led him to a 'light-bulb moment' and his ground-breaking research. Back in Bonn, he realized that to develop his thesis he had to work with the Diasonograph, which was only available in Glasgow. Although a seemingly cumbersome ultrasound machine, it was the only one capable of providing the precise measurements required for follicle tracking. In Bonn, the equipment available was the Siemen's Vidoson, so he persuaded Ian Donald to allow him to do his fellowship in Glasgow. His Annus Mirabilis was in 1977, with Hugh Robinson as a collaborator. At the end of his research he disappeared to the little island of Barra, off the coast of Scotland, to write his brilliant thesis entitled 'Demonstration of Ovulation by Ultrasound'. He gained his PhD from the University of Marburg in 1978 and was appointed full Professor of Obstetrics and Gynecology 3 years later. In 1984, he was appointed Chairman of the Department of Feto-Maternal Medicine, Gynecological and Breast Ultrasound and the Prenatal Diagnostic and Therapy Centre, Barmbeck General and Teaching Hospital, in Hamburg, and was made a full Professor in the University of Hamburg 3 years later.

Joachim is extraordinary in that he is an expert in so many aspects of our specialty: fetomaternal medicine, gynecological and breast ultrasound and prenatal diagnosis and therapy including intrauterine transfusion. When Kurt Hecher joined him in The



Joachim Hackelöer receiving the Ian Donald Gold Medal from Stuart Campbell.

Barmberg Hospital he became accomplished at laser separation in the placenta of monochorionic twins. He is indeed a master of every aspect of Ultrasound in Obstetrics and Gynecology.

As for his unique achievements: he pioneered the measurement of the growth of the ovarian follicle. In his famous article in the *American Journal of Obstetrics and Gynecology*, he established normal ultrasound values for follicular diameters at their various stages of development and correlated these values with peripheral plasma hormone levels. He demonstrated an almost linear growth of mean follicular diameter prior to ovulation and a rapid decline soon afterwards. In other words, he founded the basis of ultrasound in reproductive medicine. I would like to quote from his 1978 *Lancet* publication: 'With the technique, the developing cystic structures of the ovary can be seen, and the presence, number, and size of follicles determined. From results of 250 such scans in 20 cases, we deduced that ovulation induction would be successful (as shown by subsequent pregnancy) if the follicular diameter was 18–23 mm before human chorionic gonadotrophin was given. The technique could also be of value in detecting multiple follicular development and, consequently, the risk of resultant multiple pregnancy and hyperstimulation.' This was written 38 years ago - and is still true today.

In 1980, together with Manfred Hansmann, Joachim was responsible for the introduction of routine antenatal ultrasound screening at 20 weeks in Germany – the first national screening program anywhere. This was

remarkable; I personally was a great supporter of routine ultrasound and introduced it in my own hospital in 1970. Then, in 1974, the group in Malmö was the first to publish a study on the effects of routine ultrasound in their own hospital. The introduction of routine antenatal scanning, however, was slow to be adopted; then, suddenly, here was antenatal ultrasound screening applied to a whole nation, supported by the government and insurance companies. This set a trend in Europe for national ultrasound screening programs. It was a huge contribution by Manfred and Joachim and ensures their enduring legacy. For many years Joachim was also responsible for education and training at DEGUM, the German Ultrasound Academy, and in 1991 he became a founder member of the International Breast Ultrasound School. He has published widely on breast ultrasound which will be the subject of his talk today, and he's written a bestselling book on the subject, 'Ultrasound Mammography', which has gone through many editions. He has authored over 500 scientific publications. He is a former President of the German Ultrasound Society.

Finally, despite all his achievements, Joachim remains a modest, warm, generous and amusing companion and a supreme entertainer. He most ably entertained the guests at my 80<sup>th</sup> birthday dinner in the House of Commons with a Scottish song, 'Will ye go lassie go', on the mouth organ (see videoclip online). Joachim, the Society would be pleased if you would mount the podium, and receive our highest honor, The Ian Donald gold medal. Joachim, congratulations!

Stuart Campbell

### Presentation of the Ian Donald Medal for Technical Merit to Kjell Lindström

The Ian Donald Medal for Technical Merit is given for the outstanding contribution by an individual to technical development in the field of obstetric and gynecological ultrasound. It is a great honor for me to introduce the 2016 winner of this prestigious award, Professor Kjell Lindström.

Kjell Lindström was born in northern Sweden, above the polar circle, in 1942. He studied at Lund Technical University, where he received his degree Master of Science in Engineering in 1966 and PhD in 1978. During the years 1971–1985, he was the Head of the Department of Biomedical Engineering at the University Hospital in Malmö, Sweden, and in 1985, he became Professor and Chairman at the Institute of Electrical Measurements at Lund Technical University. He succeeded in this Chair his teacher and mentor, Professor Hellmuth Hertz.

A lot of pioneering work in the field of medical ultrasound was done at Lund University. It was there that Hellmuth Hertz, engineer, and Inge Edler, cardiologist, developed echocardiography in 1953. Kjell Lindström had already begun his research in the technology of diagnostic

ultrasound as a student. In 1967, together with Hellmuth Hertz, he developed a fast ultrasonic real-time scanning system for heart investigation. The equipment, called the Hertz-Lindström ultrasonic mirror system, produced initially seven, and, after further improvement, more than 18, two-dimensional images per second. In 1969, Kjell Lindström and Inge Edler recorded, for the first time, Doppler flow signals from the adult heart.

Since the mid-1960s, Kjell Lindström remained affiliated with Lund University. He was very active in research, collaborating closely with clinicians of various specialties and developing many new diagnostic methods based on ultrasound. These included a method for recording vocal-cord vibrations (echoglottography), an airborne ultrasound screening method for scoliosis, blood perfusion measurement with Doppler ultrasound and a method for recording longitudinal displacement and shear strain of the arterial wall. In 1988, he received, from the World Federation of Ultrasound in Medicine and Biology and the American Institute of Ultrasound in Medicine, the Medical Ultrasound Pioneer Award. Later, he also became Honorary Doctor at the Faculty of Medicine, Lund University.

My collaboration with Kjell Lindström started in the early 1970s, when he was the Head of the Biomedical Engineering Department and I was the registrar and research student at the Department of Obstetrics and Gynecology in Malmö. Luckily, despite the enormous load of administrative work, Kjell always gave priority to the research and development of new instruments at his worktable. The development of new ultrasound methods for research and clinics was a true interactive process, with very close contact between the engineers of Lindström's team and the clinical users. I will never forget the very intense brainstorming meetings in Kjell's office and his never-ending patience and enthusiasm when trying to lessen the ignorance of we clinicians in understanding the physics and techniques of ultrasound.



Kjell Lindström receiving the Ian Donald Medal for Technical Merit from Karel Maršál.



Several of the innovations and new ultrasonic devices developed by Kjell Lindström were designed for objective recording and quantification of fetal and uterine physiological activities during pregnancy. His focus on obstetric ultrasound opened up new possibilities for research in human fetal physiology, which, until the advent of ultrasound, had to depend mainly on animal experimental studies. In the early 1970s, human fetal breathing movements were recorded using A-mode ultrasound without any visual control of the origin of the received signals. Lindström developed a system, the time-distance recorder (TD-recorder) that was connected to the Vidoson, at that time the only commercially available real-time mechanical ultrasound scanner. The TD-recorder measured online the changes in fetal thorax diameter caused by breathing movements. Later, when linear-array real-time systems became available, the system was refined to enable recording of the changes in vessel diameter and measurement of the pulse wave and pulse-wave velocity in the fetal descending aorta. The Diamove system was based on ultrasound pulse-tracking of the vessel walls and was also used subsequently in adults for investigations of vascular function. In the meantime, Doppler studies of fetal volume blood flow were introduced, which used static measurements of the fetal aortic diameter in frozen two-dimensional ultrasound images for calculation of flow. Kjell Lindström's group developed a method for simultaneous recording of mean velocity from the Doppler spectrum and of the pulsating diameter of the fetal aorta. In this way, the aortic volume flow could be calculated online, avoiding many of the methodological errors in estimating flow. Other examples of new methods for obstetric application include uterine cervimetry, based on the ultrasound transit time, and equipment for automatic detection and quantification of fetal movements using a transabdominal approach.

Kjell Lindström's hobby is deep-sea fishing in the North Sea and fly fishing in Swedish rivers. It was possibly this interest in combination with his expertise in ultrasound that led him to become involved in research on dolphins, with researchers in marine biology both in Sweden and in San Diego, in the USA.

Kjell Lindström is the leading researcher and inventor within the field of medical ultrasound in Sweden and one of the most prominent researchers internationally. It is a great pleasure for me, on behalf of the International Society of Ultrasound in Obstetrics and Gynecology, to present to him the 2016 Ian Donald Medal for Technical Merit.

Karel Maršál

### Morelli prize

Professor Francesco Morelli was the director of Obstetrics and Gynecology at Capua Hospital. One of the first generation of ultrasound pioneers in Italy, he was enthusiastic and passionate about Ultrasound in

Obstetrics and Gynecology. His wife, Sig.ra Carmela, and his family instituted a prize in his memory of 2000€ to be awarded to the best project in gynecological ultrasound presented by young investigators from an Italian institution. The Committee which evaluated the projects comprised Antonia Testa, Dorella Franchi and Pasquale Martinelli; the secretary is Pasquale Morelli. In 2016 the prize went to Chiara Landolfo, for the project entitled 'Ultrasonography and translational research in preoperative diagnosis and differentiation of adnexal lesions'.

### FREE COMMUNICATION ACKNOWLEDGMENTS

The following free communications presented at the 26th World Congress on Ultrasound in Obstetrics and Gynecology are acknowledged as the best presentations in their categories. Full abstracts to these titles can be found in *Ultrasound in Obstetrics & Gynecology* 2016; 48 (Suppl S1). We thank these authors for their valuable contributions to our scientific program.

#### Top abstract winner

Fetal growth restriction induces different phenotypes of cardiac remodeling (OC01.01)

M. Rodriguez-Lopez<sup>2</sup>, M. Cruz-Lemini<sup>4</sup>, B. Valenzuela-Alcaraz<sup>1</sup>, L. Garcia-Otero<sup>2</sup>, M. Sitges<sup>5</sup>, B. Bijmens<sup>6</sup>, E. Gratacos<sup>7</sup>, F. Crispi<sup>3</sup>. <sup>1</sup>Hospital Clinic-Universitat de Barcelona, Barcelona, Spain, <sup>2</sup>BCNatal-Barcelona Center for Maternal Fetal and Neonatal Medicine (Hospital Clinic and Hospital Sant Joan de Deu), Barcelona, Spain, <sup>3</sup>BCNatal - Barcelona Center for Maternal Fetal and Neonatal Medicine (Hospital Clinic and Hospital Sant Joan de Deu), Barcelona, Spain, <sup>4</sup>BCNatal-Barcelona Center for Maternal Fetal and Neonatal Medicine (Hospital Clinic and Hospital Sant Joan de Deu), Barcelona, Spain, <sup>5</sup>Cardiovascular Institute, Hospital Clinic, IDIBAPS, University of Barcelona, Barcelona, Spain, <sup>6</sup>ICREA, Universitat Pompeu Fabra, Barcelona, Spain, <sup>7</sup>BCNatal-Barcelona Center for Maternal Fetal and Neonatal Medicine (Hospital Clinic and Hospital Sant Joan de Deu), Barcelona, Spain

#### SIEOG prize

Does fundal pressure in the second stage (Kristeller maneuver) increase the risk of pelvic floor damage? A prospective case control study (OC04.01)

A. Youssef<sup>6</sup>, G. Salsi<sup>6</sup>, M. Paganotto<sup>6</sup>, F. Bellussi<sup>6</sup>, I. Cataneo<sup>1</sup>, G. Pacella<sup>1,9</sup>, C. Azzarone<sup>3</sup>, G. Morganeli<sup>6</sup>, J. Krsmanovic<sup>11</sup>, L. Cariello<sup>6</sup>, E. Montaguti<sup>6</sup>, N. Rizzo<sup>1</sup>, G. Pili<sup>6</sup>. <sup>1</sup>Department of Obstetrics and Gynecology, Sant'Orsola - Malpighi Hospital, University of Bologna, Bologna, Italy, <sup>3</sup>Sant'Orsola-Malpighi Hospital, University of Bologna, Bologna, Italy, <sup>6</sup>Obstetrics and Gynecology, University of Bologna, Bologna, Bologna, Italy,

<sup>9</sup>Medicine and Surgery, Università campus biomedico, Roma, Italy, <sup>11</sup>University of Bologna, Bologna, Italy

### Young Investigator award winner – Obstetrics

Survival and neurodevelopment effects of Lactoferrin, Docosahexaenoic acid and environmental enrichment in an IUGR animal model (OC22.01)

M. Illa<sup>1</sup>, E. Eixarch<sup>1,2</sup>, L. Pla<sup>1</sup>, E. Muñoz-Moreno<sup>1</sup>, G. Serrano<sup>1</sup>, F. Figueras<sup>1,2</sup>, E. Gratacos<sup>1,2</sup>. <sup>1</sup>Fetal i+D Fetal Medicine Research Center, IDIBAPS, BCNatal|Barcelona Center for Maternal Fetal and Neonatal Medicine Hospital Clínic and Hospital Sant Joan de Déu, Universitat de Barcelona, Barcelona, Spain, <sup>2</sup>Centre for Biomedical Research on Rare Diseases (CIBER-ER), Barcelona, Spain, Barcelona, Spain

### Young Investigator award winner – Gynecology

Influence of ulipristal acetate therapy on uterine fibroid-related symptoms and on uterine and fibroid volume and vascularity indices assessed by ultrasound (OC23.04)

S. Baggio, F. Galeone, F. Presti, P. Pomini. *Obstetrics and Gynecology*, AOUI Verona, Verona, Verona, Italy

### Best Oral Communications

The following oral communications were each selected as the best in their subject area. Selection was according to a combination of anonymous peer review in advance of the Congress and scores for presentation and/or scientific merit allocated on-site by a panel of judges.

#### *Aneuploidy and fetal anomalies – second trimester*

Prenatal anogenital distance is shorter in fetuses with hypospadias (OC24.04)

S. Perlman, Z. Kivilevitch, B. Messing, R. Achiron, Y. Gilboa. *Prenatal Diagnostic Unit, Obstetrics and Gynecology*, Sheba Medical Center, Tel-Hashomer, Ramat Gan, Israel

#### *Fetal echocardiography, CHD and cardiac function*

Cerebral oxygen delivery, brain growth and white matter maturation are reduced in congenital heart disease fetuses (OC25.01)

J. Lim<sup>1,4</sup>, P. Muthusami<sup>1</sup>, S. Madathil<sup>1</sup>, M. Zhu<sup>1,5</sup>, B. S. Saini<sup>1,5</sup>, P. Porayette<sup>1</sup>, V. Chau<sup>6</sup>, S. Portnoy<sup>7</sup>, C. Macgowan<sup>3,7</sup>, J. G. Sled<sup>7</sup>, J. C. Kingdom<sup>2</sup>, M. Seed<sup>1</sup>, S. Miller<sup>6</sup>. <sup>1</sup>Heart Centre, The Hospital for Sick Children, Toronto, Ontario, Canada, <sup>2</sup>Obstetrics & Gynaecology, Mount Sinai Hospital, University of Toronto, Toronto, Ontario, Canada, <sup>3</sup>Diagnostic Imaging, The Hospital for Sick Children, Toronto, Ontario, Canada, <sup>4</sup>Physiology, University of Toronto, Toronto, Ontario, Canada,

<sup>5</sup>Institute of Medical Science, University of Toronto, Toronto, Ontario, Canada, <sup>6</sup>Neurology, The Hospital for Sick Children, Toronto, Ontario, Canada, <sup>7</sup>Medical Biophysics, University of Toronto, Toronto, Ontario, Canada

#### *Fetal interventions*

In-utero treatment of congenital cytomegalovirus infection with Valacyclovir in a multicenter, open-label, phase-II study (OC15.01)

M. Leruez-Ville<sup>4,5</sup>, I. Ghout<sup>6,7</sup>, L. Bussi  res<sup>4,8</sup>, J. Stirneman<sup>2,4</sup>, J. Magny<sup>4,9</sup>, S. Couderc<sup>10</sup>, L. J. Salomon<sup>2,4</sup>, T. Guilleminot<sup>4,5</sup>, P. Aegerter<sup>6,7</sup>, G. Benoist<sup>11</sup>, N. Winer<sup>3</sup>, O. Picone<sup>12</sup>, F. Jacquemard<sup>1</sup>, Y. Ville<sup>2,4</sup>. <sup>1</sup>Prenatal Diagnosis Department, American Hospital of Paris, Neuilly sur Seine, France, <sup>2</sup>Maternit  , Hopital Necker Enfants Malades, AP-HP, Universit   Paris Descartes, Paris, France, <sup>3</sup>Service de Gyn  cologie Obst  trique, Nantes, France, <sup>4</sup>EA7328, Universit   Paris Descartes, Paris, France, <sup>5</sup>Laboratoire de Microbiologie Clinique. Centre national de R  f  rence Cytomegalovirus, Hopital Necker Enfants Malades, APHP, Paris, France, <sup>6</sup>Unit   de Recherche Clinique et D  partement de Sant   Publique, AP-HP, H  pital Ambroise Par  , Boulogne, France, <sup>7</sup>UMR-S 1168, Universit   Versailles St-Quentin-en-Yvelines, Montigny, France, <sup>8</sup>Unit   de Recherche Clinique, AP-HP, H  pital Necker-E.M., Paris, France, <sup>9</sup>R  animation N  onatale, AP-HP, H  pital Necker-E.M., Paris, France, <sup>10</sup>Maternite, H  pital Intercommunal de Poissy-Saint Germain, Poissy, France, <sup>11</sup>maternit  , H  pital Universitaire de Caen, Caen, France, <sup>12</sup>Service de Gyn  cologie-Obst  trique, Hopital Foch, Suresnes, France

#### *Fetal neurosonography and central nervous system anomalies*

Malformations of cortical development: early prenatal ultrasound diagnosis (OC05.03)

S. Shinar<sup>1</sup>, K. K. Haratz<sup>4</sup>, Y. Salemnick<sup>1</sup>, J. Har-Toov<sup>2</sup>, Z. Leibovitz<sup>4</sup>, L. Gindes<sup>4</sup>, T. Lerman-Sagie<sup>4</sup>, G. Malinger<sup>3</sup>. <sup>1</sup>Lis Maternity Hospital, Tel Aviv, Israel, <sup>2</sup>US in OB&GYN, Lis Maternity Hospital, Tel Aviv, Israel, <sup>3</sup>OB-GYN Ultrasound Unit, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, <sup>4</sup>Fetal Neurology Clinic, Wolfson Medical Center, Holon, Israel

#### *Genomics*

The Belgian approach to meet the challenge in interpreting prenatal microarray results (OC06.04)

J. Muys<sup>1</sup>, B. Blaumeiser<sup>3</sup>, K. Janssens<sup>3</sup>, C. Bandelier<sup>5</sup>, J. Gatot<sup>6</sup>, A. Van Den Bogaert<sup>7</sup>, J. Vermeesch<sup>8</sup>, S. Rombout<sup>9</sup>, B. Menten<sup>2</sup>, B. Pichon<sup>4</sup>, K. Keymolen<sup>7</sup>, K. Van Den Bogaert<sup>8</sup>, S. Janssens<sup>2</sup>, J. Caberg<sup>6</sup>, J. D  sir<sup>4</sup>, Y. Sznajer<sup>5</sup>, A. Destree<sup>9</sup>, Y. Jacquemyn<sup>1</sup>. <sup>1</sup>Gynecology,

University Hospital Antwerp, Edegem, Antwerp - Belgium, Belgium, <sup>2</sup>Center for Medical Genetics, Universiteit Gent, Gent, Belgium, <sup>3</sup>Center for Medical genetics, Universiteit Antwerpen, Edegem, Belgium, <sup>4</sup>Center for Medical Genetics, Université Libre de Bruxelles, Brussels, Belgium, <sup>5</sup>Center for Medical Genetics, Université Catholique de Louvain, Louvain-la-Neuve, Belgium, <sup>6</sup>Center for Medical Genetics, Université de Liège, Liège, Belgium, <sup>7</sup>Center for Medical Genetics, Vrije Universiteit Brussel, Brussels, Belgium, <sup>8</sup>Center for Medical Genetics, Katholieke Universiteit Leuven, Leuven, Belgium, <sup>9</sup>Center for Medical Genetics, Institut de Pathologie et de Génétique, Charleroi, Gosselies, Belgium

#### *Imaging technology including MRI*

Prenatal ultrasound diagnosis of cleft palate without cleft lip, the new ultrasound semiology (OC21.05)

J. Faure<sup>1</sup>, F. Grosjean<sup>2</sup>, E. Mousty<sup>2</sup>, G. Captier<sup>3</sup>, P. Boulot<sup>1</sup>, V. Letouzey<sup>2</sup>, F. Fuchs<sup>1</sup>. <sup>1</sup>CHU Arnaud de Villeneuve, Montpellier, France, <sup>2</sup>CHU Caremeau, Nîmes, France, <sup>3</sup>CHU Lapeyronie, Montpellier, France

#### *Maternal and fetal Doppler including fetal growth*

Comparison of fetal brain apparent diffusion coefficients according to abnormal Doppler grade in early-onset intrauterine growth restriction (OC22.05)

M. S. Kutuk<sup>2</sup>, M. Sahin<sup>2</sup>, S. Gorkem<sup>3</sup>, S. Doganay<sup>3</sup>, A. Ozturk<sup>1</sup>. <sup>1</sup>Biostatistics, Erciyes University, Faculty of Medicine, Kayseri, Turkey, <sup>2</sup>Obstetrics and Gynecology, Erciyes University, Kayseri, Turkey, <sup>3</sup>Pediatric Radiology, Erciyes University, Kayseri, Turkey

#### *Multiple pregnancy*

Metabolomic changes in amniotic fluid from twin–twin transfusion syndrome recipient twins in relation to treatment and fetal cardiovascular risk (OC09.03)

F. L. Mackie<sup>1,2</sup>, W. B. Dunn<sup>3,5</sup>, J. W. Allwood<sup>5</sup>, T. Van Mieghem<sup>4</sup>, R. K. Morris<sup>1,2</sup>, C. E. Fox<sup>2</sup>, M. D. Kilby<sup>1,2</sup>. <sup>1</sup>Centre of Women's and Newborn's Health, Institute of Metabolism and Systems Research, University of Birmingham, Birmingham, West Midlands, United Kingdom, <sup>2</sup>West Midlands Fetal Medicine Centre, Birmingham, United Kingdom, <sup>3</sup>Phenome Centre, University of Birmingham, Birmingham, United Kingdom, <sup>4</sup>Fetal Medicine Division, Mount Sinai Hospital, Toronto, Ontario, Canada, <sup>5</sup>School of Biosciences, University of Birmingham, Birmingham, United Kingdom

#### *Ultrasound in term and preterm labor*

Serial intrapartum transperineal ultrasound to predict successful vaginal delivery in 190 Chinese women (OC18.03)

C. Chor. The Chinese University of Hong Kong, Hong Kong

#### *Abnormal uterine bleeding and fibroids*

Validation of risk of endometrial cancer (REC) score for diagnosis of endometrial cancer in women with postmenopausal bleeding (OC23.01)

M. Dueholm<sup>2</sup>, I. Hjorth<sup>3</sup>, K. Dahl<sup>1</sup>, G. Ørtoft<sup>4</sup>. <sup>1</sup>Obstetrics and Gynaecology, Aarhus University Hospital, Skejby, Aarhus N, Denmark, <sup>2</sup>Department of Obstetrics and Gynecology, Aarhus University Hospital, Aarhus, Denmark, <sup>3</sup>Aarhus University Hospital Skejby, Aarhus, Denmark, <sup>4</sup>Aarhus University Hospital Skejby, Aarhus, Denmark

#### *Early pregnancy complications*

Urine metabolomic changes by gestational age in early pregnancy and differences in the metabolome between viable pregnancies and those that miscarry (OC13.02)

M. Al-Memar<sup>1,2</sup>, S. Cacciatore<sup>2</sup>, S. Bobdiwala<sup>1,2</sup>, S. Saso<sup>2</sup>, J. Farren<sup>1</sup>, D. Timmerman<sup>3</sup>, P. Bennett<sup>1,2</sup>, D. MacIntyre<sup>2</sup>, T. Bourne<sup>1,2</sup>. <sup>1</sup>Early Pregnancy & Acute Gynaecology Unit, Tommy's National Miscarriage Centre, Queen Charlotte's and Chelsea Hospital, Imperial College London, London, United Kingdom, <sup>2</sup>Department of Surgery and Cancer, Imperial College London, London, London, United Kingdom, <sup>3</sup>KU Leuven, Leuven, Belgium

#### *Imaging in oncology*

Ultrasound in preoperative assessment of pelvis and abdominal spread in patients with ovarian cancer: a prospective study (OC10.01)

D. Fischerová<sup>1</sup>, M. Zikan<sup>1</sup>, R. Kocian<sup>1</sup>, P. Dundr<sup>1</sup>, A. Burgetová<sup>1</sup>, L. Dusek<sup>2</sup>, D. Cibula<sup>1</sup>. <sup>1</sup>Department of Pathology, First Faculty of Medicine and General University Hospital, Charles University, Prague, Czech Republic, <sup>2</sup>Institute of Biostatistics and Analysis, Masaryk University, Brno, Czech Republic

#### *Managing ovarian masses*

Two-step strategy to preoperatively assess adnexal lesions not classifiable by EDs, using RMI, IOTA ADNEX or Simple Rules risk model (OC07.04)

C. Landolfo<sup>3,15</sup>, W. Froyman<sup>3,15</sup>, T. Bourne<sup>4,15</sup>, B. De Cock<sup>3</sup>, A. C. Testa<sup>5</sup>, L. Valentin<sup>6</sup>, D. Fischerová<sup>7</sup>, C. Van Holsbeke<sup>8</sup>, D. Franchi<sup>9</sup>, L. Savelli<sup>10</sup>, E. Epstein<sup>11</sup>, A. Czekierdowski<sup>12</sup>, S. Guerriero<sup>2</sup>, R. Fruscio<sup>13</sup>, F. Leone<sup>1</sup>, I. Vergote<sup>14,15</sup>, J. Verbakel<sup>3,17</sup>, B. Van Calster<sup>3</sup>, D. Timmerman<sup>3,16</sup>. <sup>1</sup>Dept Obstetrics & Gynecology, DSC L. Sacco, Milan, Italy, <sup>2</sup>Department of Obstetrics and Gynecology, University of Cagliari, Cagliari, Italy, <sup>3</sup>Department of Development and Regeneration, KU Leuven, Leuven, Belgium, <sup>4</sup>Queen Charlotte's and Chelsea Hospital, Imperial College, London, UK; London, United Kingdom, <sup>5</sup>Department of Oncology, Catholic University of the Sacred Heart, Rome,



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#### *Pelvic pain and endometriosis*

Pelvic floor dysfunction at three-dimensional transperineal ultrasound in women affected by deep infiltrating endometriosis (OC26.03)

A. Youssef, D. Raimondo, S. del Forno, M. Mabrouk, V. Martelli, E. Montaguti, G. Pilu, A. Benfenati, R. Seracchioli. *Obstetrics and Gynecology, University of Bologna, Bologna, Italy*

#### *Reproductive medicine*

Prospective evaluation of impact of adenomyosis on *in-vitro* fertilization outcome (OC16.01)

T. K. Holland<sup>1</sup>, M. Khalil<sup>3</sup>, O. O'Donovan<sup>2</sup>, D. Jurkovic<sup>1</sup>, Y. Khalaf<sup>3</sup>, D. Mavrelos<sup>2</sup>. <sup>1</sup>Gynaecology diagnostic and treatment unit, University College Hospital London, London, United Kingdom, <sup>2</sup>Reproductive Medicine Unit, University College London Hospital, London, United Kingdom, <sup>3</sup>Assisted Conception Unit, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

#### *Urogynecology*

Does fundal pressure in the second stage (Kristeller maneuver) increase the risk of pelvic floor damage? A prospective case control study (OC04.01)

A. Youssef<sup>6</sup>, G. Salsi<sup>6</sup>, M. Paganotto<sup>6</sup>, F. Bellussi<sup>6</sup>, I. Cataneo<sup>1</sup>, G. Pacella<sup>1,9</sup>, C. Azzarone<sup>3</sup>, G. Morganelli<sup>6</sup>, J. Krsmanovic<sup>11</sup>, L. Cariello<sup>6</sup>, E. Montaguti<sup>6</sup>, N. Rizzo<sup>1</sup>, G. Pilu<sup>6</sup>. <sup>1</sup>Department of Obstetrics and Gynecology, Sant'Orsola-Malpighi Hospital, University of Bologna,

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#### **Best Short Oral Presentations (oral posters)**

The following short oral presentations were each selected as the best in their subject area. Selection was according to a combination of anonymous peer review in advance of the Congress and scores for presentation and/or scientific merit allocated on-site by a panel of judges.

##### *Aneuploidy and fetal anomalies – first trimester*

Abnormal sonographic appearance of posterior brain at 11–14 weeks and fetal outcome (OP25.05)

T. Fanelli<sup>2</sup>, B. Muto<sup>2</sup>, G. Volpe<sup>3</sup>, G. Rembouskos<sup>2</sup>, V. De Robertis<sup>2</sup>, G. Campobasso<sup>1</sup>, A. Tempesta<sup>2</sup>, P. Volpe<sup>2</sup>. <sup>1</sup>Fetal Medicine Unit, Di Venere Hospital, Bari, Italy, <sup>2</sup>Fetal medicine, Di Venere and Sarcone Hospital, Bari, Italy, <sup>3</sup>University of Bari, Department of Obstetrics and Gynecology, Bari, Italy

##### *Aneuploidy and fetal anomalies – second trimester*

3D assessment of the umbilical vein deviation angle (UVDA) for the prediction of liver herniation in left congenital diaphragmatic hernia (OP32.03)

N. Volpe<sup>2</sup>, E. Mazzone<sup>2</sup>, B. Muto<sup>1</sup>, A. Suprani<sup>2</sup>, T. Fanelli<sup>1</sup>, C. Kaihura<sup>2</sup>, C. Del Rossi<sup>2</sup>, T. Ghi<sup>2</sup>, P. Volpe<sup>1</sup>, T. Frusca<sup>2</sup>. <sup>1</sup>Fetal medicine, Di Venere and Sarcone Hospital, Bari, Italy, <sup>2</sup>Obstetrics and Gynecology, University Hospital of Parma, Parma, Italy

#### *Education*

Quality improvement programme for the routine anomaly scan using a dedicated quality-control platform (OP15.01)

A. T. Papageorgiou<sup>1</sup>, R. Napolitano<sup>1</sup>, M. Yaqub<sup>2</sup>, J. A. Noble<sup>2</sup>, B. Kelly<sup>1</sup>. <sup>1</sup>Nuffield Department of Obstetrics & Gynaecology and Oxford Maternal & Perinatal Health Institute, Green Templeton College, University of Oxford, Oxford, United Kingdom, <sup>2</sup>Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom

##### *Fetal echocardiography, congenital heart defects and cardiac function*

Evaluation of tissue Doppler imaging (TDI) for measurement of the right fetal myocardial performance index (MPI); an international online study (OP06.06)

H. Avnet<sup>2,5</sup>, J. Wang<sup>6</sup>, H. Gardiner<sup>3</sup>, E. A. Hernandez-Andrade<sup>4</sup>, F. Crispi<sup>1</sup>, S. Redmond<sup>6</sup>, A. W. Welsh<sup>2,5</sup>. <sup>1</sup>Maternal Fetal Medicine, BCNatal-Barcelona Center for Maternal Fetal and Neonatal Medicine Hospital

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#### *Fetal interventions*

Acute impact of fetal surgery for myelomeningocele on placental and cerebrovascular circulations (OP21.02)

L. Sun<sup>1</sup>, Z. Tian<sup>1</sup>, J. Moldenhauer<sup>2</sup>, N. Khalek<sup>2</sup>, J. Martinez-Poyer<sup>2</sup>, M. P. Johnson<sup>2</sup>, N. Adzick<sup>2</sup>, J. Rychik<sup>1</sup>. <sup>1</sup>Fetal Heart Program, The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, United States, <sup>2</sup>Center for Fetal Diagnosis and Treatment, The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, United States

Prediction for postnatal treatment of hydrocephalus in fetuses that underwent a neural tube defect (NTD) repair based on prenatal brain imaging (OP21.03)

M. Sanz Cortes<sup>1</sup>, C. Guimares<sup>2</sup>, M. Yopez<sup>1</sup>, A. Zarutskie<sup>1</sup>, N. Park<sup>1</sup>, L. M. Mack<sup>1</sup>, R. Gandhi<sup>1</sup>, A. N. Shetty<sup>1</sup>, A. Nassr<sup>1</sup>, H. Sangi-Haghpeykar<sup>1</sup>, W. Lee<sup>1</sup>, M. A. Belfort<sup>1</sup>, W. Whitehead<sup>3</sup>. <sup>1</sup>Obstetrics and Gynecology, Baylor College of Medicine, Houston, Texas, United States, <sup>2</sup>Radiology, Baylor College of Medicine, Houston, Texas, United States, <sup>3</sup>Neurosurgery, Baylor College of Medicine, Houston, Texas, United States

#### *Fetal neurosonography and central nervous system anomalies*

Clinical significance of 3D HDlive silhouette/flow in neurosonography and fetal neurosonography (OP01.10)

R. K. Pooh. CRIFM Clinical Research Institute of Fetal Medicine PMC, Osaka, Japan

#### *Imaging technology including MRI*

Novel MRI assessment of maternal cerebral oxygen consumption and oxygen extraction during pregnancy (OP28.03)

A. N. Shetty<sup>1,2</sup>, M. Sanz Cortes<sup>1,2</sup>, M. Yopez<sup>1,2</sup>, P. Liu<sup>3</sup>, H. Lu<sup>3</sup>, K. Fox<sup>1,2</sup>, M. A. Belfort<sup>1,2</sup>, W. Lee<sup>1,2</sup>. <sup>1</sup>Obstetrics and Gynecology, Baylor College of Medicine, Houston, Texas, United States, <sup>2</sup>Texas Children's Hospital Pavilion for Women, Houston, Texas, United States, <sup>3</sup>Radiology, Johns Hopkins University School of Medicine, Baltimore, Maryland, United States

#### *Maternal and fetal Doppler including fetal growth*

Obstetric home-monitoring including CTG in complicated pregnancies: development and results of system, based on free available Open Source software (OP31.05)

O. Petersen, L. Holst. *Obstetrics and Gynecology, Aarhus University Hospital Skejby, Aarhus N, Denmark*

#### *Multiple pregnancy*

Customized fetal growth curves in twin pregnancies: an Italian multicenter study (OP13.01)

T. Ghi<sup>6</sup>, F. Prefumo<sup>4</sup>, E. Ferrazzi<sup>7</sup>, C. Di Pietro<sup>5</sup>, C. Celentano<sup>15</sup>, N. Chianchiano<sup>14</sup>, E. Cosmi<sup>3</sup>, A. Fichera<sup>4</sup>, S. Gabrielli<sup>2</sup>, M. Lanna<sup>7</sup>, A. Mazzocco<sup>12</sup>, E. Pappalardo<sup>8</sup>, E. Periti<sup>10</sup>, N. Persico<sup>13</sup>, T. Stampalija<sup>11</sup>, E. Viora<sup>9</sup>, P. Volpe<sup>1</sup>, G. Rizzo<sup>5</sup>. <sup>1</sup>Department of Obstetrics and Gynecology, Di Venere Hospital, Bari, Italy, <sup>2</sup>Department of Obstetrics and Gynecology, Policlinico S.Orsola Malpighi, Bologna, BO, Italy, <sup>3</sup>Department of Woman and Child Health, University of Padua, Padova, Italy, <sup>4</sup>Department of Obstetrics and Gynecology, University of Brescia, Brescia, Italy, <sup>5</sup>Department of Obstetrics and Gynecology, University Roma Tor Vergata, Roma, Italy, <sup>6</sup>Department of Obstetrics and Gynecology, University of Parma, Bologna, Italy, <sup>7</sup>Department Woman Mother and Neonate, Buzzi Children's Hospital University of Milan, Milano, Italy, <sup>8</sup>Department of Obstetrics and Gynecology, ARNAS Garibaldi Nesima, Catania, Italy, <sup>9</sup>Department of Obstetrics and Gynecology, Ospedale Sant'Anna, Torino, Italy, <sup>10</sup>Unit of Maternal Fetal Medicine, Piero Palagi Hospital, Florence, Italy, <sup>11</sup>Unit of Prenatal Diagnosis, Institute for Maternal and Child Health, IRCCS Burlo Garofolo, Trieste, Trieste, Italy, <sup>12</sup>Department of Obstetrics and Gynecology, Ospedale Montebelluna, Montebelluna TV, Italy, <sup>13</sup>Department of Obstetrics and Gynecology, Università di Milano Fondazione Ca' Granda, Ospedale Maggiore Policlinico, Milan, Italy, <sup>14</sup>Department of Obstetrics and Gynecology, Ospedale Fatebenefratelli, Palermo, Italy, <sup>15</sup>Department of Obstetrics and Gynecology, Università di Chieti, Chieti, Italy

#### *Role of ultrasound in patient safety*

Abnormally invasive placenta – prevalence, risk factors and antenatal suspicion: results from a large population-based study in the Nordic countries (OP27.04)

L. Thurn<sup>1</sup>, P. G. Lindqvist<sup>2</sup>, M. Jakobsson<sup>7</sup>, L. B. Colmorn<sup>4</sup>, K. Klungsoyr<sup>5</sup>, I. Bjarnasdóttir<sup>6</sup>, A. Tapper<sup>8</sup>, P. E. Børdahl<sup>9</sup>, K. Gottvall<sup>10</sup>, K. Birch<sup>11</sup>, L. Krebs<sup>12</sup>, M. Gissler<sup>13</sup>, J. Langhoff-Roos<sup>4</sup>, K. Källén<sup>3</sup>. <sup>1</sup>Fetal Medicine, Lund University, Karlskrona, Sweden, <sup>2</sup>Obstetrics and Gynaecology, Karolinska University Hospital, Stockholm, Sweden, <sup>3</sup>Lund University, Lund,



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#### Ultrasound in term and preterm labor

Prospective study on cervical length (CL) in the first and second trimesters in a large Danish cohort (OP11.01)

C. B. Wulff<sup>2</sup>, L. Rode<sup>2</sup>, E. Hoseth<sup>3</sup>, O. Petersen<sup>1</sup>, A. Tabor<sup>2</sup>. <sup>1</sup>Dept of Obstetrics and Gynecology, Aarhus University Hospital Skejby, Aarhus N, Denmark, <sup>2</sup>Center of Fetal Medicine, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark, <sup>3</sup>Fetal Medicine Unit, Obstetrics, Aalborg University Hospital, Aalborg, Denmark

#### Abnormal uterine bleeding and fibroids

Changes in the sonographic characteristics of adenomyosis after treatment with ulipristal acetate (OP30.04)

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#### Early pregnancy complications

The potential use of urinary  $\beta$ hCG for managing pregnancies of unknown location (PUL): correlating urinary & serum  $\beta$ hCG levels using two immunoassays (OP18.07)

S. Bobdiwala<sup>1</sup>, B. De Cock<sup>2</sup>, R. Harvey<sup>3</sup>, Y. Abdallah<sup>4</sup>, M. Al-Memar<sup>1</sup>, R. Fisher<sup>3</sup>, C. Stalder<sup>1</sup>, D. Timmerman<sup>5</sup>, B. Van Calster<sup>5</sup>, T. Bourne<sup>1,5</sup>. <sup>1</sup>Tommy's National Early Miscarriage Research Centre, Queen Charlotte's & Chelsea Hospital, Imperial College, London, United Kingdom, <sup>2</sup>Biomedical Sciences Group, KU Leuven, Brecht, Belgium, <sup>3</sup>Charing Cross Trophoblast Unit, London, United Kingdom, <sup>4</sup>Obstetrics and Gynaecology,

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#### Imaging in oncology

Early cervical cancer: can we consider TVUS an alternative to MRI in preoperative delineation of tumor extension? (OP14.01)

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#### Managing ovarian masses

Clinical history of low-risk ovarian lesions in post-menopausal women (OP09.02)

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#### Pelvic pain and endometriosis

Complications during pregnancy and delivery in women with untreated rectovaginal deep endometriosis (OP34.08)

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#### Reproductive medicine

Essure for women with hydrosalpinx before embryo transfer: a systematic review and meta-analysis (OP22.07)

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#### Urogynecology

Ultrasonographic evaluation of the urethral rhabdosphincter's morphology in female patients with urodynamic stress incontinence (OP04.01)

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